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Citation: Cao Ngoc, Anh and Wyatt, Tanya (2016) The Conceptual Compatibility Between Green Criminology and Human Security: A Proposed Interdisciplinary Framework for Examinations into Green Victimisation. *Critical Criminology*, 24 (3). pp. 413-430. ISSN 1205-8629

Published by: Springer

URL: <http://dx.doi.org/10.1007/s10612-016-9318-7> <<http://dx.doi.org/10.1007/s10612-016-9318-7>>

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The Conceptual Compatibility Between Green Criminology and Human Security: A Proposed Interdisciplinary Framework for Examinations into Green Victimisation

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Abstract The overriding aim of this paper is to develop a conceptual framework that can be used to systematically examine the victimisation from environmental or green crime. By analysing the conceptual and pragmatic compatibilities between two distinctive academic fields of green criminology and human security (HS) and by discussing the impacts of timber trafficking on HS, it is argued that it would be logical, achievable and fruitful to employ a broad HS perspective to advance the understanding of the mechanism of green victimisation with a focus on human victims.

Introduction

Environmental or green crime has become an increasingly critical issue worldwide. It is estimated that the monetary value of all forms of transnational organized environmental crime is worth between \$70 and \$213 billion annually (Nellemann et al. 2014), making them “currently one of the most profitable forms of criminal activity taking place throughout the world” (Interpol 2012:3). Due to their “extraordinary extent and volume”, environmental crimes are “emerging as very serious global threats that cannot be underestimated any longer” (UNODC 2013:1), becoming “the biggest crimes in the history of the world. No other crimes have threatened the existence of the entire planet” (Lynch and Stretesky 2014:174). Despite this enormity, it seems many criminologists have long

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ignored this topic, leading to a “woefully low” quantity of discussions on green crimes and environmental justice (Zilney et al. 2006:56).

Against this backdrop, in the last 25 years green criminology (GC) has become “an independent and unique branch of the criminological field” (Cao and Wyatt 2013), established and actively developed to specifically examine various forms of environmental harm and crime. Yet, GC faces a number of challenges and gaps in knowledge. This article focuses on the lack of conceptual frameworks that help systematically identify and evaluate mechanisms of green victimisation. Even though the initial foundations of green victimology have been set out, this topic still remains “a surprisingly under-researched and under-theorised aspect of environmental degradation” (Hall 2013a:145).

This article suggests an initiative for filling this gap by integrating a broad approach in HS into the existing discussion on green victimisation. To justify this initiative, after the background of GC and HS are briefly introduced, the paper firstly reveals three preliminary foundations for the idea of integrating a security perspective into GC. Afterwards, three main conceptual compatibilities between the two distinctive disciplines are analysed. The paper then proposes a conceptual framework that can be used to investigate the process of green victimisation and applies this to systematically reveal the impacts of timber trafficking.

The Background

It is an interesting coincidence that GC and HS were born almost at the same time. The term GC was first coined by Lynch (1990) as he envisioned that radical criminology could benefit from an association with environmental movements. There are different semantics related to GC, including “green perspectives” (South 1998) among numerous others (Ellefsen et al. 2012; Gibbs et al. 2010; Herbig and Joubert 2006; Walters 2010; White 2009, 2010, 2011). Despite these different terminological usages, green criminologists share a common spirit that challenges conventional perceptions in criminology about how to conceptualise the essence, extent, victim and offender of environmental harm and crime. As defined by Ruggiero and South (2013:360), GC

can be defined as a framework of intellectual, empirical and political orientations toward primary and secondary harms, offences and crimes that impact in a damaging way on the natural environment, diverse species (human and non-human) and the planet.

GC emerged because overall mainstream criminology shows limitations and irrelevance in terms of identifying and evaluating the nature, causes and actual seriousness of green issues. This is possibly because traditional criminologists take criminal justice as the only valid approach to justice to study green harm and crime and the vast majority of research is within this frame of reference (Lynch 2013). Alternatively, GC employs a variety of approaches to justice to conceptualise green crimes and victimisations that traditional criminology does not recognise. Therefore, GC can make more exhaustive evaluations of the systemic and particularistic nature of harm, which is crucial to formulate more environmentally friendly legislation and respond more effectively to harm and crime (Eman et al. 2009; White 2008).

Like the position of GC in the criminological agenda, HS was only introduced in 1994 by the United Nations Development Program (UNDP) at the end of the Cold War with the

erosion of the narrow, state-centric, militarised paradigm of national security in policy and academic circles (Newman 2010). Like GC, the formulation of HS serves certain purposes, uppermost of which attempt to raise attention the concerns of individual people, especially those marginalised, in an insecure and globalised world (Dodds and Pippard 2012). Pragmatically, it attempts also to dedicate human and financial resources more to poverty relief and less to military purposes (Kerr 2007). To states, so-called security issues are often dealt with like wars which means an “extraordinary allocations of resources” (Barnett et al. 2010:6). Here the conceptual crossover between GC and HS begins to become apparent as GC is also concerned with individual victims, especially those marginalised. Further basis for integration is explored in the next section.

Preliminary Foundations for Integration

This paper proposes three main foundations for incorporating a HS perspective into a framework of GC. The first foundation stems from the nature of criminology and GC. Considered as a “rendezvous discipline” (Holdaway and Rock 1998), disciplinary hybridity is one of the greatest strengths of criminology (Zedner 2007). The same applies to GC which is “an open framework” (Ruggiero and South 2013:361) and diversity is one of its great strengths (South et al. 2013). The GC literature employed here reflects this interdisciplinary nature and the field continues to engage with ideas and materials from a wide array of sources and disciplines both within the social sciences and with the natural sciences. The field of security studies is not an exception.

Secondly, security studies tends to have strong conceptual links to criminology in general and GC in particular. Valverde (2014:383) believes that “the theories and histories of security that we now have are certainly useful to criminology”. Furthermore, security is “too big an idea to be constrained by the strictures of any single discipline”, the very nature of criminological efforts and central criminological presumptions have now been shifted by security (Zedner 2009:10). For example, the conventional clear-cut distinctions between policing and security service, crime and terrorism, domestic and national security, community safety and international peacekeeping have been blurred (Zedner 2009). Valverde (2011, 2014) meanwhile, proposes an alternative way of controlling crime via the provision and governance of security. Most recently, Shearing (2015:264) posits that “pursuing lines of enquiries that challenge criminology’s established boundaries is crucial if it is to continue to advance understanding of the governance of security”.

In terms of GC, it already “encompasses some of the tenets” of security studies (Hauck 2007:270). For example, Wyatt (2013a, b) has demonstrated the security implications of the green crime of wildlife trafficking. Others have discussed major consequences of environmental degradation on security of human beings in terms of their health, safety and continued prosperity (Hall 2013a, 2014), and how environmental insecurity amplifies the fortress mentality of states (White 2014).

Thirdly, transnational organised crime is widely proved as a direct or even existential threat at both national and individual levels (Castle 1997; Guymon 2000; Levitsky 2003; Picarelli 2008; Tadros 2008). If so, there is no reason to assume that transnational and/or organised environmental crime cannot pose such similar security threats. As is evident, frequently the consequences of green crime are more pervasive and/or serious than street crime (Lynch 2013; OECD 2012); green crime is often detrimentally definitive, long lasting, and even permanent (Wright 2011); the profits of some forms of green crime such

as wildlife and timber trafficking are not much lower than the big three: arms, human and drug trafficking (Interpol 2012; South and Wyatt 2011; UNODC 2010); and environmental crime is closely connected to other serious crimes (Liddick 2011; UNODC 2012). For example, various forms of environmental crimes in the domains of oil exploration, forestry, mining, fisheries, hazardous waste management and wildlife trade are strongly connected to, and facilitated by, corruption (UNODC 2012). In other words, green crime, perpetrated by transnational organised crime and others, is an appreciable security threat. A preliminary foundation for the amalgamation of GC and security studies then does exist. The next sections concretely propose the conceptual compatibilities between GC and HS: critical definitional approaches, blamed parties and protected parties.

Critical Definitional Approaches

Definition of “Crime”

Both GC and HS are seen as critical schools of thoughts, beginning with the ways they critically define their uppermost concept: “crime” and “security”. For GC, redefining, or at least offering a variety of ways for defining green crime, is a key task and distinguishes it from orthodox criminology (Natali 2013). It has been proposed that there are four different perspectives (legalist, socio-legal, ecocentric and biocentric) to define green crime (Skinnider 2011). The “legalist” perspective (also referred to as “strict legalist”, “conventional criminological conceptions”, “corporate perspective” by Gibbs et al. (2010:125), White (2011:21) and Lynch and Stretesky (2003:229), respectively), bases the definition of green crime on the criminal law.

Although relying on criminal laws to stipulate environmental crime, as argued by mainstream criminologists, may be precise and “value-free” (Lynch and Stretesky 2003:229), the legalist perspective shows salient problems. For instance, since “crime” in criminal law has “no ontological reality” (Hall 2013a:14), a definitional approach that focuses solely on criminal law results in criminologists failing to create an objective and independent definition of crime (Lynch and Stretesky 2014). For instance, in regards to illegal logging, much illegal and destructive logging is conducted by, or with complicity of, states that provide the formal definition of the crime. It is problematic if criminologists “use the criminals’ own definition of ‘crime’ to study this crime” (Green et al. 2007:119). Other practices such as choosing minority communities as waste sites, overselling pesticides to farmers, polluting by corporations, ecocide, animal abuse and cruelty that would be perceived as standard and “above the law” practices (Brisman 2012; Nurse 2013; White 2011) would also remain invisible in a legalist perspective. The inherent limitations of the legalist perspective drove GC to develop new approaches to defining crime (Table 1).

As can be seen from Table 1, the socio-legal perspective expands to include not only criminal laws, but also administrative and civil violations that cause environmental degradation. Ecocentrism expands further to consider ‘crime’ as including those activities that are environmentally destructive regardless of their legal classification. Ecocentrism views humans as one component of a complex ecosystem and recognises the intrinsic value of the ecosystems, emphasising that “human and their activities are inextricably integrated with the rest of the natural world in communal or communal-like arrangements” (Steverson 1994:71). Ecocentrism does not prohibit use of the environment, but it must be done in a manner that is sustainable (Halsey and White 1998; White 2008, 2011).

Table 1 Different approaches to define green crime, adapted from Skinnider (2011:16–18) and Gibbs et al. (2010:125–127)

No.	Perspectives	Definitional foundations	Definitions of environmental crime
1	Legalist	Criminal laws	Violation of criminal laws designed to protect the health and safety of people, the environment or both
2	Socio-legal	All forms of legal provisions including criminal laws as well as administrative, civil laws and regulations	Any illegal activity or formal rule-breaking, whatever form the rule might be
3	Ecocentric	Environmental and ecological impacts	Those acts that have identifiable environmental damage outcomes and originated in human action but that may or may not violate existing rules and environmental regulations
4	Biocentric	Species justice	Any human activity that disrupts a biotic system. This includes intentional or negligent human activity or manipulation that impacts negatively on the earth's biotic and abiotic natural resources, resulting in immediately noticeable or indiscernible natural resource trauma

At the extreme, biocentrism also considers ‘crime’ to be environmental destruction and goes further than ecocentrism in regarding any actions disrupting biotic systems to be harmful and therefore prohibited (Gibbs et al. 2010; Halsey 2004; Halsey and White 1998). To define a green crime, biocentrism bases on the concepts of *species justice* and *speciesism* (Beirne 2007, 2009; White 2008; Wyatt 2012). It pays particular attention to addressing animal rights, arguing that “humans routinely discriminate against nonhuman animals with our everyday usage of species language” (Beirne 2007:62).

Thus, overall the range of criminalised activities is increasingly wider following the order of the four approaches. This means that while the first legalist approach only recognises a very limited number of environmentally harmful activities, in the biocentric approach, the scale of acts defined as crime is largest because it counts any acts of human beings that disrupt a biotic system. This range of criminalised activities is demonstrated in Fig. 1 below.

Definition of HS

The definition of HS originates from the concept of “security” of which a number of definitions have been offered in the field of security studies. In common usage, the word “security” refers to “freedom from various risks” (King and Murray 2001:7) or the “absence of threats to acquired values” (Wolfers 1952:485). However, it may be clearer and more realistic if security is defined as “a low probability of damage to acquired values” (Baldwin 1997:13). In terms of HS, there is no “real consensus” of the meaning or the application (Hampson 2008:230). There are individual efforts to provide definitions of HS (Alkire 2003; Commission on Human Security 2003); and continued debate as to if HS is a paradigm (Newman 2010; Tadjbakhsh and Chenoy 2007), a description, a concept, a

Fig. 1 Scope of criminalised acts in different definitional approaches in GC



doctrine, a theory or an ideology (Fukuda-Parr and Messineo 2012). All these considerations, however, have a highly agreed starting point that security policy and analysis must revolve around the individual as the referent and primary beneficiary, and that state security is only one of the means to achieve HS (Newman 2010). Therefore, the safety of the individual is the key to global security; thus, when the safety of individuals is threatened, so too is national security (Hampson 2008).

In regards to what specific threats to individual humans should be securitised, there is an analytical divergence. On the one hand, the narrow approach to HS focuses on the consequences of armed conflict and the political violence posed to civilians by repressive governments and situations of state failure (Human Security Centre 2005; MacFarlane and Khong 2006; UNDP 2005). On the other hand, the broad approach to HS is interested in not only threats from political and armed violence, but also non-armed threats to human integrity such as endemic diseases, natural disaster, starvation and severe poverty. Specifically, it is proposed that HS includes seven elements: economic, food, health, environmental, personal, community and political security (UNDP 1994). Thus, the outcomes to be secured in this approach cover not only “freedom from fear”, but also “freedom from want” (Commission on Human Security 2003; UNDP 1994).

In brief, both GC and HS offer critical perspectives that go beyond the conventional approaches based on criminal law and state interest to define crime and security, respectively. This leads to further radical conceptualisations of which parties should be blamed for crime and security threats, and which parties deserve to be better protected from both.

Blamed Parties

Green Perpetrators

Although the range of perpetrators of green crime is wide and diverse “from solo fly-tippers to huge multinational corporations” (Bell and McGillivray 2008:264), corporations

and state actors arguably harm the environment more than other offenders (White 2010:6). GC challenges the continuing orthodox imagination that (1) crime is the conduct of the poor and the powerless (Reiman 1995) and (2) criminology is mainly a science designed for controlling and oppressing the marginalised (Lynch 2000). Instead, GC “tends to begin with a strong sensitivity toward crimes of the powerful” (White 2013:22).

Much of the motivation behind environmental harm is economic and happens in order to maintain capitalist production, which is based upon continual growth (Stretesky et al. 2014). Growth comes at the expense of the environment that provides the materials for production. Environmental harm caused by corporations and states in pursuit of profit is mostly hidden because they control criminalisation (Passas 2005; Tombs and Whyte 2009, 2015). Kramer (2014:24), for example, looks into the destructive relationship between the fossil fuel industry and states that “allows catastrophic climate change and its victimisation to continue unabated”. That is not to say all green crime is economic in origin, animal abuse and cruelty as well as demand for wildlife products and pollution can be motivated by status seeking and culture (Brisman and South 2014; Cao and Wyatt 2013; Wyatt 2012).

Security Threats

In a similar vein to GC that recognises states as major perpetrators of green crimes, HS denies that states are the unique security subject and points out that in many instances states can be a chief security threat. Indeed, traditional security perspectives under the banner of *state security*, consider states as the central actors of national security and the most powerful international actors; security is, therefore, security of the states. This longstanding conception has dominated thinking in international relations because in global affairs, security of states is always the central and most vital concern (Morgan 2007).

However, after the Cold War, there have been major changes both negative and positive that require new approaches to better cope with emerging security issues (Sen 2000). On the negative side, traditional perspectives are not capable of explaining a wide range of contemporary security issues in particular the fact that secure states do not automatically mean secure people (Human Security Centre 2005). Indeed, protecting citizens from foreign attacks would be a necessary condition for the security of individuals, but surely it is not sufficient and not always an effective one (Newman 2010). As argued by the Commission on Human Security (2003:2), the state remains the “fundamental purveyor” of security, but “it often fails to fulfil its security obligations—and at times has even become a source of threat to its own people”. Failed states that can no longer provide effective governance of, and invariably fail to obtain, HS, and that at times are “outwardly aggressive and inwardly repressive regimes can be major sources of human insecurity” (Lodgaard 2000:3). In fact, during the last 100 years far more people have been killed by their own governments than by foreign armies (Human Security Centre 2005:viii), which leads to a discussion of the parties to be protected in GC and HS.

Protected Parties

Victims of Green Crime

Another significant feature that distinguishes GC from other criminological perspectives is of a radical approach in identifying the victims (White 2008:122), which is “crucial” to

wholly understand various impacts of green crime (White and Heckenberg 2014:343). Victims of green crime are generally excluded from criminology; and thus “the voices and views of these victims of environmental harm have largely remained absent from the relevant literature, and indeed from policy debates” (Hall 2014:135). This exclusion may be firstly because victims of environmental harm are not commonly recognized as legitimate victims of crime, but rather environmental crime is “victimless” or “lacks concrete identifiable victims” (Skinnider 2011:23), has “invisible victims” (Spapens 2014:221) or in the case of wildlife crime, it is seen as “harmless” (Crow et al. 2014:185). Second, victims of green crimes are often not capable of speaking of their suffering. Spapens (2014:224) notes that “flora and fauna do not report crimes. The same is often true for humans”. Third, as addressed earlier, a large quantity of environmental crime is not criminalised or is “legal and takes place with the consent of society” (Korsell 2001:133), meaning that green victimisation does not fit neatly within standard conceptions that have been commonly adopted by most criminal justice systems (Hall 2013b). As a consequence of the exclusion, criminology has excluded “those who most need to be empowered and to have their rights protected” (Lynch and Stretesky 2014:81).

Regarding how and to what extent the victims are harmed, green harm and crime affects every group of victim, but more importantly there is clear discrimination, in which vulnerable groups such as poor countries, lower classes, aboriginal communities, women and children are more likely to be victimised. Indeed, women, children, nonhuman animals and the environment are all regarded as “natural resources”, and are “significantly devalued as individuals through the objectification of their bodies” (Sollund 2013:324). In the US, Bullard (1996:22) observes that “it is the poorest among the nation’s inhabitants who are being poisoned at an alarming rate”.

A core aspect of GC is its advocacy that nonhuman species and the environment are “capable of suffering [such] harm, and thus deserving of protection” (Wyatt 2012:27). This proposition found in GC is arguably the main point of departure from HS and worthy of further exploration, which, for lack of space, is beyond the focus of this article. As part of being pragmatic and productive, the framework proposed in this article focuses on human victims, which is also an important direction when examining green harm and crime.

Referent Object of Security

HS is distinctive in considering ordinary individuals, particularly the marginalised, as its core unit of analysis and the “raison d’être” of security agendas (Barnett et al. 2010:9). “The concept of security has for too long been interpreted narrowly”, and ignores “the legitimate concerns of ordinary people who sought security for their daily lives” (UNDP 1994:22). For example,

A fourth-grade schoolgirl in Ghana: “I shall feel secure when I know that I can walk the streets at night without being raped”. A shoe-mender in Thailand: “When we have enough for the children to eat, we are happy and we feel secure”. A man in Namibia: “Robberies make me feel insecure. I sometimes feel as though even my life will be stolen” (UNDP 1994:23).

The narrow state-centred perception does “nothing to overcome the insecurity experienced by individuals and communities in large parts of the world, especially in the developing world” (Kaldor 2007:196). Thus, HS suggests that security discussions should take into account the fact that the biggest killers in the world are extreme poverty, preventable disease, and the consequences of pollution (Human Security Centre 2005). Other issues such

as population pressures, increasing migration, economic crises, increasing inequality and international criminal activity also have the potential to widely and profoundly threaten security at both national and global levels (Alkire 2003). In the current context, any idea of security which disregards ordinary people is “conceptually, empirically and ethically inadequate” (Newman 2010:80).

When the broad approach is adopted, rather than investing a massive budget on a costly arms race, states would securitise various issues such as public and environmental health to ensure HS, resulting in much more policy attention to, and resources for, these domains that are essential and beneficial for all people (MacFarlane and Khong 2006). For example, globally by 1985 almost \$900 billion was spent for military goals, it would cost \$30 billion to provide water for people worldwide (Nsiah-Gyabaah 2010). This is fully in line with ecocentrism by incorporating environmental justice and sustainability into the core concerns.

Both the backgrounds of, and compatibilities (critical definitions, and blamed and protected parties), between GC and HS have been laid out in order to propose the following framework to explore green victimisation with a focus on human victims.

A Proposed Framework for Examination of Green Victimisation

Carrabine et al. (2009:403) point out that green crime is a feature of a global risk society. The risk society here refers precisely to an “insecure society” because “in its most basic sense, insecurity is the risk of something bad happening to a thing that is valued” (Barnett 2007:183). Specifically, green crime leads its victims to insecure situations, so it is rational and logical to adopt relevant tools that assess the levels of (in)security of the victims to assess the victimisation from green crime. Given the strong compatibilities between GC and HS, it is believed that both narrow and broad HS perspectives, the latter in particular, could be (further) integrated into GC. This is because as an “emancipatory and empowering concept” (Voelkner 2012:19), the broad perspective recognises previously invisible victims of insecurity while the narrow HS approach continues to challenge severe political and armed violence. In the broad approach, any person in the world then can be a legitimate subject of concern not only those seeking freedom from fear but also those seeking freedom from want.

Furthermore, the broad HS with seven elements (economic, food, health, environmental, personal, community and political security (UNDP 1994) provide a comprehensive framework that allows systematic investigation into the mechanism of how the security of victims of green crime particularly human victims is threatened by the crime at both individual and collective levels. All of these elements have been conceptualised at a basic level, enabling flexibility and modification in identifying and evaluating the multifaceted processes of green victimisation (see Table 2). Additionally, the seven security components are interconnected which means “a threat to one element of human security is likely to travel—like an angry typhoon—to all forms of human security” (UNDP 1994:33).

The Application of the Proposed Framework

In order to demonstrate the conceptual compatibility between GC and HS and the productiveness of applying the proposed framework, the next session reviews the impacts of timber trafficking as a form of green crime on human security.

Table 2 A conceptual framework for examining green victimisation, adapted from UNDP (1994)

Dimensions	Aspects of victimisation
Economic security	Incomes and livelihoods derived from work, the public, environmental resources, or reliable social safety nets
Food security	Physical and economic access to basic foods
Health security	Protection from infectious or parasitic diseases, access to personal health care and protective public health regimes
Environmental security	Healthy living environment, safety from natural disasters and access to basic resources such as water and land
Personal security	Physical safety from, and no anxiety of, crime, particularly violent crime
Community security	Membership in a community with cultural identity and values, and safety from oppressive community practices and from ethnic conflict
Political security	Freedom from state oppression and abuses of basic human rights

Economic Security and Food Security

Economic security requires “an assured basic income—usually from productive and remunerative work or in the last resort from some publicly financed safety net”, whereas food security calls for all people at all times to “have both physical and economic access to basic food” (UNDP 1994:25&27). The economic and food security dimensions are briefly recapped by the Commission on Human Security (2003:73):

When people’s livelihoods are deeply compromised—when people are uncertain where the next meal will come from, when their life savings suddenly plummet in value, when their crops fail and they have no savings—human security contracts. People eat less and some starve. They pull their children out of school. They cannot afford clothing, heating or health care. Repeated crises further increase the vulnerability of people in absolute or extreme poverty.

Under this conceptual framework, it is observed that timber trafficking globally could threaten the livelihoods, employment and food resources of around one billion forest-dependent people worldwide (Lawson and MacFaul 2010; World Bank 2007). This is because illicit logging lessens forest quality and leads to outright deforestation, thus depriving local inhabitants of vital resources such as agricultural implements, construction materials, medicines, and fuel-wood (Chan 2010; FAO 2007; Global Witness 2001). Additionally, timber trafficking causes a number of possible economic impacts such as the erosion of economic efficiency, reduction and misallocation of investments in sustainable forest management, the creation of an unfair playing field for legitimate forest industries, and the stealing of government revenue (Contreras-Hermosilla 2001). In the early 2000s, for example, every year governments were deprived of \$10–15 billion in revenue because of illegal logging (World Bank 2002, 2007), increasing to \$30 billion in 2012 (Nellemann 2012). In Indonesia, timber trafficking costs the government no less than \$2 billion every year due to corruption, uncollected taxes, unacknowledged subsidies, and general poor management of resources (Chan 2010). It is evident that the monetary cost of timber trafficking is considerable for governments and societies worldwide; and the cost would limit national expenditure to improve human security.

Health Security

Good health, including protecting human lives, is surely both essential and instrumental to achieve human security. Health security is, therefore, at the vital core of human security, and illness, disability and avoidable death are “critical pervasive threats” (Commission on Human Security 2003:96). It is true that logging is a physically onerous and risky job, particularly so when it comes to illegal logging that often takes place in remote jungles at night without personal protective equipment; consequently, health security of the illicit loggers could be threatened (Casson and Obidzinski 2007; Chan 2010; OECD 2012). Most workers in illegal sawmills in Kotawaringin Timur, Indonesia, for example, can only endure the work for 6 months to a year because of the tremendously strenuous and dangerous nature of the work with many losing hands due to the use of band saws (Casson and Obidzinski 2007).

Personal Security

Personal security is chiefly concerned with physical and mental safety from violence particularly from violent crime (Commission on Human Security 2003; UNDP 1994). Because violence is never far away from timber trafficking (van Solinge and Kuijpers 2013), the crime could become a threat to personal security. The world’s largest tropical rainforests in Brazil, Peru, Congo and Indonesia have seen “significant deforestation-related violence” (van Solinge and Kuijpers 2013: 201). It is not rare to see cases of timber trafficking that involve murder, violence, threats and atrocities against indigenous forest-living people, journalists and local environmental activists (van Solinge 2008; EIA 2012; Interpol and World Bank 2009; Nellemann 2012). In Rosita, Nicaragua, to earn money armed groups threaten loggers and traders (Richards et al. 2003). In Brazil, in the state of Para alone, from 1971 to 2004, 772 human rights and forest activists were murdered, while hundreds are also facing threats of murder as a result of fighting against coalitions of loggers, farmers and cattle ranchers (van Solinge and Kuijpers 2013). These incidents provide strong evidence that timber trafficking is a significant threat to personal security.

Environmental Security

Environmental security necessitates a healthy living environment, safety from natural disasters and access to basic resources such as water and land. As a form of green crime, timber trafficking threatens basic conditions for environmental security. At the outset, illegal logging, particularly illegal large-scale harvesting, is a “significant contributor” to (Interpol and World Bank 2009:4), and “among the most important drivers” of (Lawson and MacFaul 2010:1), severe deforestation. Globally, during the 1990s, 12.5 million hectares of forests disappeared (Liddick 2011), and recently more than 100 million m³ of timber are still being illegally harvested annually, resulting in the degradation and possible eventual destruction of five million hectares of forest each year (Lawson and MacFaul 2010).

Once massive areas of forest are lost, inevitably the green functions of these forests, particularly carbon sequestration and reduction and filtration of water flows are substantially hampered, which leads to natural disasters such as climate change, flash flooding, landslides, forest fires and soil erosion (Rosander 2008; Stewart 2014; UNODC 2010). Goncalves et al. (2012) propose that over the last decade, a 22 % drop in illegal logging

would have resulted in the prevention of over one billion tonnes of carbon dioxide emissions. It is thus recommended that decreasing deforestation and illegal logging is “the fastest, most effective and least controversial means” to trim global emissions of climate gases (Nellemann 2012:13).

Secondly, timber trafficking poses a dramatic threat to biodiversity, particularly in already over-logged areas, watershed zones and biodiversity hotspots (Rosander 2008; UNODC 2010). The current high rate of timber trafficking means populations of inhabitants and wild animals in the forest are “rapidly shrinking” (van Solinge 2010:34). In the Riau province in Indonesia, a notorious hotspot of illegal logging, 65 % of its forests have disappeared over the last 25 years, while at the same time, there has been an 84 % decline in elephant populations, and 70 % in the number of tigers (WWF 2008). In short, “illegal logging and the trade in stolen timber are among the most destructive environmental crimes occurring today”, directly threatening vital forests of the world (EIA 2012:2); and the environmental impacts can be extensive, not simply upon the surrounding regions, but have global implications (Brack 2004).

Community Security

Community security is chiefly concerned (1) with membership of a community that “can provide a cultural identity and a reassuring set of values”, and (2) with the safety from oppressive community practices and ethnic conflict (UNDP 1994:31). In this sense, timber trafficking could threaten the values of forest-based communities that have resided inside and relied on forests for centuries. Indeed, in parallel with the economic, social and environmental significance, it is widely recognised that forests have aesthetic, religious, and cultural values particularly for long-established forest-based communities (Buttoud 2000; Trigger and Mulcock 2005). Because it is clear that “their cultures are as rich as the forest ecosystems” and that “when the forest goes their culture goes too”, on-going intensive forest exploitation has deep impacts on the cultural values of indigenous tribal residents (Grainger 1993:109). As an example to demonstrate the community conflicts triggered by timber trafficking, there is a so-called “conflict timber”, where the illicit profits from timber trade are used as a major source of financing for community conflicts, which has been recognised in many countries such as Liberia, Democratic Republic of the Congo, Sierra Leone, Cambodia, Côte d’Ivoire, and Myanmar (FAO 2007; Global Witness 1998, 2003).

Political Security

Regarding political security which is concerned with freedom from state oppression and abuses of basic human rights, although there has not been clear evidence demonstrating the close connection between timber trafficking and state repression and human rights violations, current literature on timber trafficking reveals a number possible political impacts of timber trafficking. In West Kalimantan, Indonesia, for instance, some green activists warn that timber trafficking is sometimes employed as a “political weapon” to fund election campaigns and to attack the opposition figures’ reputation and finances (Human Rights Watch 2009:41). Additionally, transnational timber trafficking may trigger political rows, occasionally supplemented by military deployments or shows of force (Elliott 2007). In the long term, timber trafficking, via corruption, would touch the political or military domain (UNODC 2012); thus “the political infrastructure and stability of a country can be

jeopardised” (Interpol and World Bank 2009:15). Weak and unstable states could find difficult to protect human security of their citizens (UNDP 1994).

Placing all the impacts presented throughout this section into the broad framework of human security, it can be seen that timber trafficking affects almost every element of human security in varying, but substantial, degrees. This suggests that this framework can be used to examine the victimisation from other forms of green crime.

Conclusion

Lately, in responding to new challenges in the Anthropocene epoch, there has been a “wholehearted” call for connecting criminology, probably via GC, with security studies (Shearing 2015; South 2015). This has been firmly objected to by Floyd (2015:277) who believes that this idea is “analytically weak”, and that “not only does it necessitate the rethinking of the meaning of crime, but also criminalisation [not securitisation] can be used to achieve compliance with environmental legislation”. She further argues that “elevating environmental issues to security problems does not necessarily produce a more secure environment for people” (Floyd 2015:277).

Yet, given the firm preliminary foundations and the strong conceptual compatibilities between GC and HS and practical fruitfulness when applying the broad HS framework to investigate security impacts of timber trafficking as analysed in this paper, it is argued that the integration of HS into GC is neither analytically weak nor practically unproven. Instead, it would be theoretically logical, pragmatically achievable and productive to adopt the broad HS perspective to investigate the victimisation from green crime in a systematic fashion. Additionally, by employing such a framework, green crime may attract more attention from politicians who have the power to prioritise environmental harm and crime. Indeed, since security studies is one of the key fields that is paid profound attention to by politicians (Collins 2007; Williams 2008), intertwining GC with security studies would increase the footing of GC in top political agendas.

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References

- Alkire, S. (2003). *A conceptual framework for human security*. Oxford: Centre for Research on Inequality, Human Security and Ethnicity—University of Oxford.
- Baldwin, D. A. (1997). The concept of security. *Review of International Studies*, 23(1), 5–26.
- Barnett, J. (2007). Environmental security. In A. Collins (Ed.), *Contemporary security studies* (pp. 182–203). New York: Oxford University Press.
- Barnett, J., Matthew, R. A., & O’Brien, K. L. (2010). Global environmental change and human security: An introduction. In R. A. Matthew, J. Barnett, B. McDonald, & K. L. O’Brien (Eds.), *Global environmental change and human security*. Cambridge: MIT Press.
- Beirne, P. (2007). Animal rights, animal abuse and green criminology. In P. Beirne & N. South (Eds.), *Issues in green criminology: confronting harms against environments, humanity and other animals*. Cullompton: Willan Publication.
- Beirne, P. (2009). *Confronting animal abuse: Law, criminology, and human–animal relationships*. New York: Rowman & Littlefield Publishers.
- Bell, S., & McGillivray, D. (2008). *Environmental law*. Oxford, New York: Oxford University Press.

- Brack, D. (2004). The growth and control of international environmental crime. *Environmental Health Perspectives*, 112(2), A80–A81.
- Brisman, A. (2012). Crime–environment relationships and environmental justice. *Seattle Journal for Social Justice*, 6(2), 6.
- Brisman, A., & South, N. (2014). *Green cultural criminology: Constructions of environmental harm, consumerism, and resistance to ecocide*. London: Routledge.
- Bullard, R. D. (1996). Environmental justice for all. In R. D. Bullard (Ed.), *Environmental justice and communities of color* (pp. 3–22). San Francisco: Sierra Club Books.
- Buttoud, G. (2000). How can policy take into consideration the “full value” of forests? *Land Use Policy*, 17(3), 169–175.
- Cao, N. A., & Wyatt, T. (2013). A green criminological exploration of illegal wildlife trade in Vietnam. *Asian Journal of Criminology*, 8(2), 129–142.
- Carrabine, E., Cox, P., Lee, M., Plummer, K., & South, N. (2009). *Criminology: A sociological introduction*. New York, NY: Routledge.
- Casson, A., & Obidzinski, K. (2007). From new order to regional autonomy: Shifting dynamics of illegal logging in Kalimantan, Indonesia. In L. Tacconi (Ed.), *Illegal logging, law enforcement, livelihoods and the timber trade*. London: Earthscan.
- Castle, A. (1997). *Transnational organized crime and international security*. Vancouver: Institute of International Relations, University of British Columbia.
- Chan, A. (2010). *Illegal logging in Indonesia: The environmental, economic and social costs*. Minneapolis: BlueGreen Alliance.
- Collins, A. (2007). *Contemporary security studies*. Oxford: Oxford University Press.
- Commission on Human Security. (2003). *Human security now*. New York: United Nations.
- Contreras-Hermosilla, A. (2001). *Law compliance in the forestry sector: An overview*. Washington, DC: World Bank.
- Crow, M., Shelley, T. O. C., & Stretesky, P. (2014). Camouflage-collar crime: An examination of wildlife crime and characteristics of offenders in Florida. In T. Spapens, R. White, & M. Kluin (Eds.), *Environmental crime and its victims: Perspectives within green criminology* (pp. 185–204). Surrey: Ashgate.
- Dodds, F., & Pippard, T. (2012). *Human and environmental security: An agenda for change*. London: Routledge.
- EIA. (2012). *Appetite for Destruction: China's trade in illegal timber*. London: Environmental Investigation Agency.
- Ellefsen, R., Larsen, G., & Sollund, R. (2012). *Eco-global crimes: Contemporary problems and future challenges*. Farnham: Ashgate Publishing Ltd.
- Elliott, L. (2007). Transnational environmental crime in the Asia Pacific: An un(der)securitized security problem? *Pacific Review*, 20(4), 499–522.
- Eman, K., Meško, G., & Fields, C. B. (2009). Crimes against the environment: Green criminology and research challenges in Slovenia. *Journal of Criminal Justice and Security*, 11(4), 574–592.
- FAO. (2007). *State of the World's Forests 2007*. Rome: Food and Agriculture Organization of the United Nations.
- Floyd, R. (2015). Environmental security and the case against rethinking criminology as ‘security-ology’. *Criminology and Criminal Justice*, 15(3), 277–282.
- Fukuda-Parr, S., & Messineo, C. (2012). Human security: A critical review of the literature. Centre for Research on Peace and Development (CRPD) Working Paper (11).
- Gibbs, C., Gore, M. L., McGarrell, E. F., & Rivers, L., I. I. I. (2010). Introducing conservation criminology towards interdisciplinary scholarship on environmental crimes and risks. *British Journal of Criminology*, 50(1), 124–144.
- Global Witness. (1998). *Going Places... Cambodia's future on the move*. London: Global Witness.
- Global Witness. (2001). *The logs of war, the timber trade and armed conflict*. London: Global Witness.
- Global Witness. (2003). *The usual suspects: Liberia's weapons and mercenaries in Côte d'Ivoire and Sierra Leone, why it's still possible, how it works and how to break the trend*. London: Global Witness.
- Goncalves, M. P., Panjer, M., Greenberg, T. S., & Magrath, W. B. (2012). *Justice for forest: Improving criminal justice efforts to combat illegal logging*. Washington, DC: World Bank.
- Grainger, A. (1993). *Controlling tropical deforestation*. London: Earthscan Publications.
- Green, P., Ward, T., & Mcconnachie, K. (2007). Logging and legality: Environmental crime, civil society, and the state. *Social Justice*, 34(108), 94–110.
- Guymon, C. L. D. (2000). International legal mechanisms for combating transnational organized crime: The need for a multilateral convention. *Berkeley Journal International L.*, 18, 53.

- Hall, M. (2013a). *Victims of environmental harm: Rights, recognition and redress under national and international law*. London: Routledge.
- Hall, M. (2013b). Victims of environmental harms and their role in national and international justice. In R. Walters, D. Westerhuis, & T. Wyatt (Eds.), *Emerging issues in green criminology: Exploring power, justice and harm* (pp. 218–241). Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.
- Hall, M. (2014). Environmental harm and environmental victims: Scoping out a 'green victimology'. *International Review of Victimology*, 20(1), 129–143.
- Halsey, M. (2004). Against 'green' criminology. *British Journal of Criminology*, 44(6), 833–853.
- Halsey, M., & White, R. (1998). Crime, ecophilosophy and environmental harm. *Theoretical Criminology*, 2(3), 345–371.
- Hampson, F. O. (2008). Human security. In P. Williams (Ed.), *Security studies: An introduction*. London: Routledge.
- Hauck, M. (2007). Non-compliance in small-scale fisheries: A threat to security. In P. B. A. N. South (Ed.), *Issues in green criminology: Confronting harms against environments, humanity and other animals* (pp. 270–289). Devon, Cullompton: Willan Publishing.
- Herbig, F., & Joubert, S. (2006). Criminological semantics: Conservation criminology—vision or vagary? *Acta Criminologica*, 19(3), 88–103.
- Holdaway, S., & Rock, P. (1998). *Thinking about criminology*. London: UCL Press.
- Human Rights Watch. (2009). "Wild Money" the human rights consequences of illegal logging and corruption in Indonesia's forestry sector. New York: Human Rights Watch. http://www.hrw.org/sites/default/files/reports/indonesia1209web_0.pdf.
- Human Security Centre. (2005). *Human security report 2005: War and peace in the 21st century*. Oxford: Oxford University Press.
- Interpol. (2012). *Environmental crime, it's global theft*. Interpol—Environmental Crime Programme. <http://www.interpol.int/Crime-areas/Environmental-crime/Environmental-crime>.
- Interpol & World Bank. (2009). *Chainsaw project: An interpol perspective on law enforcement in illegal logging*. Rural Development and Natural resources—World Bank & INTERPOL.
- Kaldor, M. (2007). *Human security: Reflections on globalization and intervention*. Cambridge: Polity.
- Kerr, P. (2007). Human security. In A. Collins (Ed.), *Contemporary security studies* (pp. 91–108). Oxford: Oxford University Press.
- King, G., & Murray, C. J. L. (2001). Rethinking human security. *Political Science Quarterly*, 4, 585–610.
- Korsell, L. E. (2001). Big sick, little sick: Strategies for combating environmental crime. *Journal of Scandinavian Studies in Criminology and Crime*, 2, 127.
- Kramer, R. (2014). Climate change: A state-corporate crime perspective. In T. Spapens, R. White, & M. Kluin (Eds.), *Environmental crime and its victims: Perspectives within green criminology*. Surrey: Ashgate.
- Lawson, S., & Macfaul, L. (2010). *Illegal logging and related trade indicators of the global response*. The Royal Institute of International Affairs.
- Levitsky, M. (2003). Transnational criminal networks and international security. *Syracuse Journal of International Law and Commerce*, 30(2), 227.
- Liddick, D. (2011). *Crimes against nature: Illegal industries and the global environment*. Santa Barbara, CA: Praeger.
- Lodgaard, S. (2000). Human security: Concept and operationalization. Norwegian Institute of International Affairs.
- Lynch, M. (1990). The greening of criminology: A perspective on the 1990s. *The Critical Criminologist*, 2(3), 1–4.
- Lynch, M. J. (2000). The power of oppression: Understanding the history of criminology as a science of oppression. *Critical Criminology*, 9(1–2), 144–152.
- Lynch, M. J. (2013). Reflections of green criminology and its boundaries: Comparing environmental victimization and considering crime from an eco-city perspective. In N. South & A. Brisman (Eds.), *The Routledge international handbook of green criminology* (pp. 43–57). London: Routledge.
- Lynch, M. J., & Stretesky, P. B. (2003). The meaning of green: Contrasting criminological perspectives. *Theoretical Criminology*, 7(2), 217–238.
- Lynch, M. J., & Stretesky, P. (2014). *Exploring green criminology: Toward a green criminological revolution*. Farnham: Ashgate Publishing Ltd.
- Macfarlane, S. N., & Khong, Y. F. (2006). *Human security and the United Nations*. Boomington: Indiana University Press.
- Morgan, P. (2007). Security in international politics: Traditional approaches. In A. Collins (Ed.), *Contemporary security studies* (pp. 13–34). Oxford: Oxford University Press.

- Natali, L. (2013). The contemporary horizon of green criminology. In N. South & A. Brisman (Eds.), *The Routledge international handbook of green criminology* (pp. 73–84). London: Routledge.
- Nellemann, C. (2012). *Green carbon, black trade: Illegal logging, tax fraud and laundering in the worlds tropical forests. A Rapid Response Assessment*, INTERPOL Environmental Crime Programme—United Nations, Birkeland Trykkeri AS, Norway.
- Nellemann, C., Henriksen, R., Raxter, P., Ash, N., & Mrema, E. (2014). *The environmental crisis—threats to sustainable development from illegal exploitation and trade in wildlife and forest resources*. United Nations Environment Programme and GRID-Arendal, Nairobi and Arendal, www.grida.no.
- Newman, E. (2010). Critical human security studies. *Review of International Studies*, 36(1), 77–94.
- Nsiah-Gyabaah, K. (2010). Human security as a prerequisite for development. In R. A. Matthew, J. Barnett, B. McDonald, & K. L. O'Brien (Eds.), *Global environmental change and human security* (pp. 237–259). Cambridge: MIT Press.
- Nurse, A. (2013). *Animal harm: Perspectives on why people harm and kill animals*. Burlington, VT: Ashgate.
- OECD. (2012). *Illegal Trade in Environmentally Sensitive Goods*. Paris: Organisation for Economic Co-operation and Development.
- Passas, N. (2005). Lawful but awful: 'Legal corporate crimes'. *The journal of socio-economics*, 34(6), 771–786.
- Picarelli, J. T. (2008). Transnational organized crime. In P. Williams (Ed.), *Security studies: An introduction* (pp. 453–467). London: Routledge.
- Reiman, J. (1995). The rich get richer and the poor get prison: Ideology, crime, and criminal justice. No.: ISBN 0-02-439250-2, 237.
- Richards, M., Wells, A., Gatto, F. D., Contreras-Hermosilla, A., & Pommier, D. (2003). Impacts of illegality and barriers to legality: A diagnostic analysis of illegal logging in Honduras and Nicaragua. *International Forestry Review*, 5(3), 282–292.
- Rosander, M. N. (2008). *Illegal logging: Current issues and opportunities for Sida/SENSA engagement in Southeast Asia*. Bangkok: RECOFTC & Sida.
- Ruggiero, V., & South, N. (2013). Green criminology and crimes of the economy: Theory, research and praxis. *Critical Criminology*, 21(3), 359–373.
- Sen, A. (2000). *Conference paper: Why human security*. Tokyo: International Symposium on Human Security.
- Shearing, C. (2015). Criminology and the anthropocene. *Criminology and Criminal Justice*, 15(3), 255–269.
- Skinnider, E. (2011). *Victims of environmental crime: Mapping the issues*: International Centre for Criminal Law Reform and Criminal Justice Policy.
- Sollund, R. (2013). The victimization of women, children and non-human species through trafficking and trade—Crime understood through an ecofeminist perspective. In N. South & A. Brisman (Eds.), *The Routledge international handbook of green criminology* (pp. 317–330). London: Routledge.
- South, N. (1998). A green field for criminology? A proposal for a perspective. *Theoretical Criminology*, 2(2), 211–233.
- South, N. (2015). Anticipating the anthropocene and greening criminology. *Criminology and Criminal Justice*, 15(3), 270–276.
- South, N., Brisman, A., & Beirne, P. (2013). A guide to a green criminology. In N. South & A. Brisman (Eds.), *The Routledge international handbook of green criminology* (pp. 27–42). London: Routledge.
- South, N., & Wyatt, T. (2011). Comparing illicit trades in wildlife and drugs: An exploratory study. *Deviant Behavior*, 32(6), 538–561.
- Spapens, T. (2014). Invisible victims: The problems of policing environmental crime. In T. Spapens, R. White, & M. Kluin (Eds.), *Environmental crime and its victims: Perspectives within green criminology* (pp. 221–236). Surrey: Ashgate.
- Steverson, B. K. (1994). Ecocentrism and ecological modeling. *Environmental Ethics*, 16(1), 71–88.
- Stewart, D. (2014). Project LEAF, and Interpol's work on illegal logging and forest crime. In T. Spapens, R. White, & M. Kluin (Eds.), *Environmental crime and its victims: Perspectives within green criminology* (pp. 236–247). Surrey: Ashgate.
- Stretesky, P. B., Long, M. A., & Lynch, M. J. (2014). *The treadmill of crime: Political economy and green criminology*. Oxon, New York: Taylor and Francis.
- Tadjbakhsh, S., & Chenoy, A. M. (2007). *Human security: Concepts and implications*. Oxon: Routledge.
- Tadros, V. (2008). Crimes and security. *The Modern Law Review*, 71(6), 940–970.
- Tombs, S., & Whyte, D. (2009). The state and corporate crime. In R. Coleman, J. Sim, S. Tombs, & D. Whyte (Eds.), *State, power, crime* (pp. 103–115). London: Sage.
- Tombs, S., & Whyte, D. (2015). *The corporate criminal: Why corporations must be abolished*. Abingdon, Oxon - New York, NY: Routledge.

- Trigger, D., & Mulcock, J. (2005). Forests as spiritually significant places: Nature, culture and belonging 'in Australia. *The Australian Journal of Anthropology*, 16(3), 306–320.
- UNDP. (1994). *Human development report 1994*. New York: United Nations Development Program.
- UNDP. (2005). *Human development report; 2005, International cooperation at a crossroads: Aid, trade and security in an unequal world*. New York: United Nations Development Programme.
- UNODC. 2010. *The globalization of crime—a transnational organized crime threat assessment*. United Nations Office on Drugs and Crime.
- UNODC. (2012). *Corruption, environment and the United Nations Convention against corruption*. United Nations Office for Drugs and Crime in Indonesia.
- UNODC. 2013. *Transnational organized crime in East Asia and the Pacific*. Bangkok 10200, Thailand: United Nations Office on Drugs and Crime - Regional Office for Southeast Asia and the Pacific.
- Valverde, M. (2011). Questions of security: A framework for research. *Theoretical Criminology*, 15(1), 3–22.
- Valverde, M. (2014). Studying the governance of crime and security: Space, time and jurisdiction. *Criminology and Criminal Justice*, 14(4), 379–391.
- van Solinge, T. B. (2008). Eco-crime: The tropical timber trade. In D. Siegel & H. Nelen (Eds.), *Organized crime: Culture, markets and policies* (pp. 97–111). New York: Springer.
- Van Solinge, T. B. (2010). Equatorial deforestation as harmful practice and criminological issue. In R. White (Ed.), *Global environmental harm*. Cullompton: Willan Publishing.
- Van Solinge, T. B., & Kuijpers, K. (2013). The Amazon rainforest—a green criminological perspective. In N. South & A. Brisman (Eds.), *The Routledge international handbook of green criminology*. London: Routledge.
- Voelkner, N. (2012). *Human security assemblages in global politics: The meteriality and instability of biopolitical governmentality in Thailand and Vietnam*. Submitted for the degree of DPhil, Department of International Relations, University of Sussex.
- Walters, R. (2010). Toxic atmospheres air pollution, trade and the politics of regulation. *Critical Criminology*, 18(4), 307–323.
- White, R. (2008). *Crimes against nature: Environmental criminolgy and ecological justice*. Cullompton: Willan.
- White, R. (2009). Introduction: Environmental crime and eco-global criminology. In R. White (Ed.), *Environmental crime: A reader* (pp. 1–8). Willan: Cullompton.
- White, R. (2010). Globalisation and environmental harm. In R. White (Ed.), *Global environmental harm: Criminological perspective*. Cullompton: Willan Publishing.
- White, R. (2011). *Transnational environmental crime: Toward an eco-global criminology*. London: Routledge.
- White, R. (2013). The conceptual contours of green criminology. In R. Walters, D. Westerhuis, & T. Wyatt (Eds.), *Emerging issues in green criminology: Exploring power, justice and harm* (pp. 17–33). Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.
- White, R. (2014). Environmental insecurity and fortress mentality. *International Affairs*, 90(4), 835–851.
- White, R., & Heckenberg, D. (2014). *Green criminology: An introduction to the study of environmental harm*. Oxon & New York: Routledge.
- Williams, P. (2008). Security studies: An introduction. In P. Williams (Ed.), *Security studies: An introduction*. London: Routledge.
- Wolfers, A. (1952). 'National security' as an ambiguous symbol. *Political Science Quarterly*, 67(4), 481–502.
- World Bank. (2002). *A revised forest strategy for the World Bank Group*. World Bank Group.
- World Bank. (2007). Weak forest governance costs US\$15 billion a year. *News Release No. 2007/86/SDN* <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/EXTAFRSUMESSD/EXTFORINAFR/0,contentMDK:21055716~menuPK:2493506~pagePK:64020865~piPK:149114~theSitePK:2493451,00.html>. Access date: 3/6/2015.
- Wright, G. (2011). Conceptualising and combating transnational environmental crime. *Trends in Organized Crime*, 14(4), 332–346.
- WWF. (2008). Destruction of Sumatra forests driving global climate change and species extinction. WWF. http://worldwildlife.org/press_releases/destruction-of-sumatra-forests-driving-global-climate-change-and-species-extinction-wwf. Access date: 3/6/2015.
- Wyatt, T. (2012). *Green criminology & wildlife trafficking: The illegal fur and falcon trades in Russia Far East*. Saarbrücken Lap: Lambert Academic Publishing.
- Wyatt, T. (2013a). The security implications of the illegal wildlife trade. *The Journal of Social Criminology*, 'Green Criminology' Special Issue, Autumn/Winter, 130–158.
- Wyatt, T. (2013b). *Wildlife trafficking—a deconstruction of the crime, the victims and the offenders*. Basingstoke: Palgrave Macmillan.

- Zedner, L. (2007). Pre-crime and post-criminology? *Theoretical Criminology*, 11(2), 261–281.
- Zedner, L. (2009). *Security*. London: Routledge-Cavendish.
- Zilney, L. A., McGurrin, D., & Zahran, S. (2006). Environmental justice and the role of criminology an analytical review of 33 years of environmental justice research. *Criminal Justice Review*, 31(1), 47–62.